

National Aeronautics  
and Space Administration

# WOMEN CONTRACTORS AT NASA

Selected Profiles of  
Women-Owned Small Businesses  
contributing to America's Space Program



Office of Small and Disadvantaged  
Business Utilization



## **The NASA Vision**

To improve life here,  
To extend life to there,  
To find life beyond.

## **The NASA Mission**

To understand and protect our home planet,  
To explore the universe and search for life,  
To inspire the next generation of explorers  
... as only NASA can.

## Acknowledgments

Thank you to the following people for making this publication a success: the women-owned businesses and their staffs; Sean O’Keefe, NASA Administrator; Ralph C. Thomas III, Assistant Administrator for Small and Disadvantaged Business Utilization; Shirley A. Perez, NASA Woman-Owned Small Business Advocate; the NASA Office of Small and Disadvantaged Business Utilization (OSDBU) staff; and the NASA Headquarters Office of Printing and Design—Jennifer Cuff and Michelle Cheston. Without your cooperation, guidance, support, and understanding, this publication would not have been possible. All of your contributions and efforts are sincerely appreciated.





## Introduction by Sean O'Keefe, Administrator National Aeronautics and Space Administration

I am delighted to once again acknowledge the outstanding contributions of women business leaders and entrepreneurs to the achievement of NASA's vision and mission goals.

NASA is committed to awarding work for our ambitious aeronautics and space research and exploration programs to the widest possible pool of talent. I am very pleased that our storied Agency has more than quadrupled its total contract dollars to women-owned businesses in the last decade.

As the following pages will show, women-owned businesses have participated in every major NASA mission activity, helping us to understand and protect our home planet, explore the universe and search for life, and inspire the next generation of explorers.

To further our space exploration progress, President Bush has proposed that NASA conduct a sustained and affordable human and robotic program of exploration throughout the solar system. We will certainly be counting on women contractors to help us develop the spacecraft and technologies needed for expanding the reach of human civilization into the cosmos.

On behalf of NASA, I not only congratulate the outstanding women contractors featured here, but also those serving us throughout the Agency.

A handwritten signature in black ink, reading "Sean O'Keefe". The signature is stylized, with the first letters of the first and last names being prominent.

NASA Administrator







Introduction by Ralph Thomas,  
Assistant Administrator for Small and  
Disadvantaged Business Utilization

A publication that highlights the dramatic achievement of selected women contractors of NASA is long overdue. However, if this feat had been completed at an earlier time in NASA's history, it may not have contained some of the great accomplishments of women-owned contractors for NASA in recent years.

As one can see from the bar chart in this publication, NASA has been increasing the dollars it awards to women-owned small businesses in both prime and subcontract dollars year after year at a remarkable rate. Indeed, NASA has more than quadrupled its total contract dollars to women-owned businesses from \$219 million in FY 1992 to \$743 million in FY 2002. Federal law requires that the Government "award 5 percent of its total prime contract and subcontract" dollars to women-owned small businesses. Although NASA easily surpassed this goal with a 6.3 percent accomplishment, it is hardly the reason for NASA's utilization of women contractors.

The reason for such a substantial increase in dollars by NASA to women-owned businesses is a simple one—we are satisfied by their contract performance. When the Space Shuttles were grounded a few years ago because of cracks that were discovered on their mainframes, it was a woman-owned business that repaired the defects, thus allowing the Shuttles to fly again. Also, it was a woman-owned business that went into action on the morning of the Columbia Shuttle accident, providing critical photographic analysis to the ensuing investigation. In fact, just a few years ago, it was a woman-owned business that was presented the George M. Low Award, NASA's highest honor to a contractor.

As the profiles in the publication will reflect, women contractors and subcontractors have made a number of other significant contributions to NASA's Mission. In recognition of those contributions, this publication is one whose time has come.

A handwritten signature in black ink that reads "Ralph C. Thomas III". The signature is written in a cursive, flowing style.

Ralph C. Thomas III

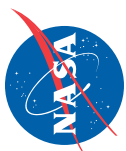




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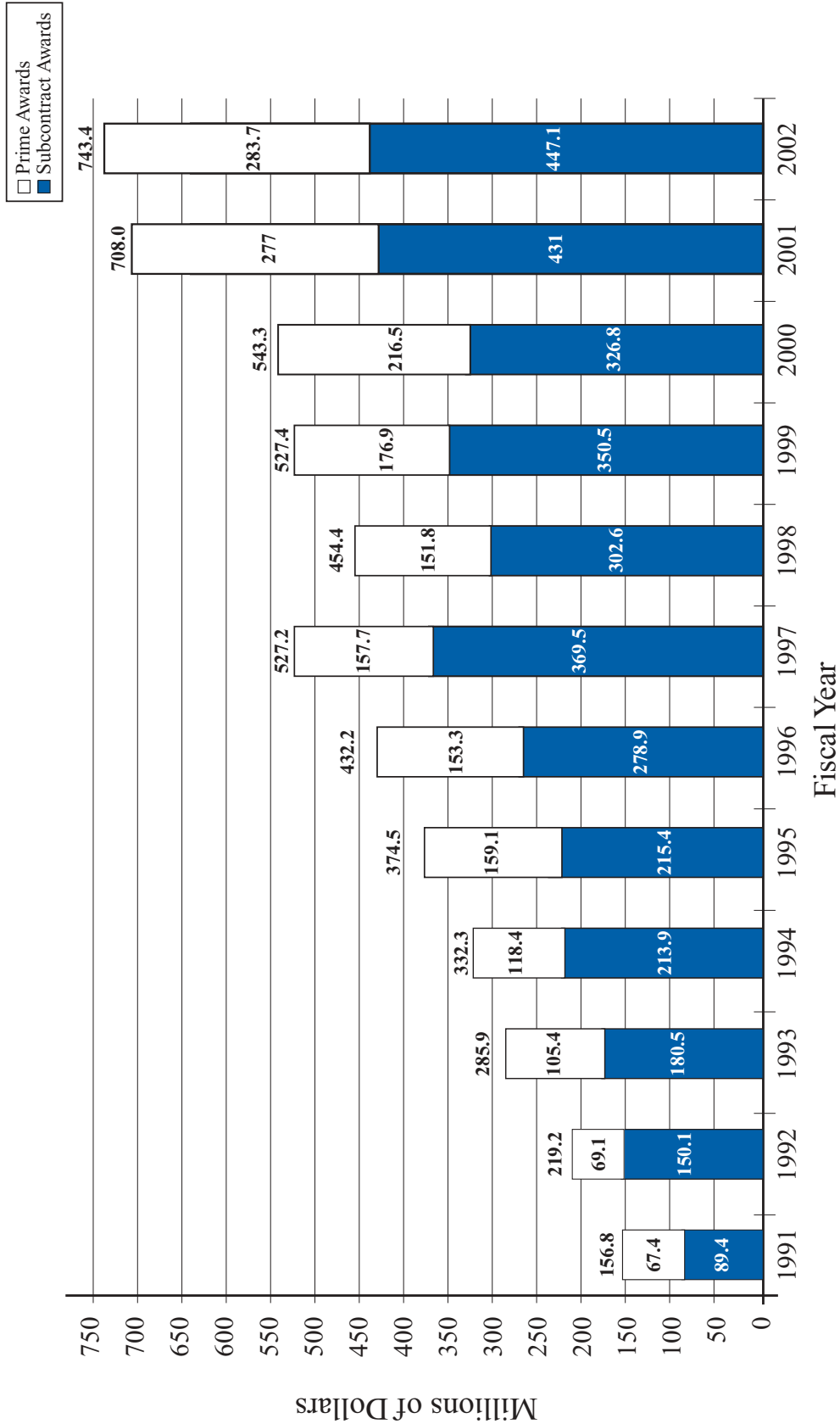
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# TOTAL NASA AWARDS TO WOMEN-OWNED SMALL BUSINESS—FY 1991–FY 2002

Office of Small and Disadvantaged Business Utilization





## Diana MacArthur, *Dynamac Corporation*

Diana MacArthur is Chair and CEO of Dynamac Corporation, a science, engineering, and technology company that specializes in the areas of environment; space, life, and earth sciences; health; and homeland security. Founded in 1970 with a staff of 4, Dynamac has grown to 400 and has provided consulting, managerial, and R&D services to more than 20 Federal agencies and many state, regional, and commercial clients.

Since 1995, Dynamac has held the Life Science Services Contract at NASA John F. Kennedy Space Center (KSC), supporting life sciences experiments launched into low-Earth orbit; designing and managing biology experiments aboard the Space Shuttles and International Space Station; developing advanced bioregenerative life-support systems for long-duration space travel; studying microbial contamination related to planetary exploration; conducting natural resources management activities; operating NASA analytical laboratories; and supporting NASA-wide Occupational Health Programs.

Diana MacArthur's vision for Dynamac is to maintain a strong foundation in science and technology, and to give added value to clients. Fulfilling that vision, Dynamac offers expertise in more than 40 disciplines, with nearly 50 percent of the staff having advanced degrees, and the company has engaged in partnerships with dozens of organizations to conduct research and technology transfer. For example, in conjunction with NASA, the State of Florida, and Florida universities, Dynamac conceptualized, helped design, and now manages the Space Life Sciences Lab at KSC and occupies a majority of the space. Dynamac is collaborating with Los Alamos National Laboratory (LANL) in the development of a fire spread/intensity model (FIRETEC), and LANL is considering field use of Dynamac's FireMAN, a fire-risk and fire-management system developed at KSC. Dynamac is working with the Smithsonian Environmental Research Center at KSC on a long-term study of global climate change, evaluating the effects of elevated atmospheric CO<sub>2</sub> levels on Florida scrub oak-palmetto ecosystems.

MacArthur served on the President's Committee of Advisors on Science and Technology (PCAST) from 1994 to 2001, and she is a member of the Board of Visitors of the University of Maryland Biotechnology Institute and the boards of the Smithsonian Environmental Research Center, the National Council for Science and the Environment, and the Los Alamos National Laboratory Foundation.

Diana MacArthur holds a BA in economics from Vassar College and was elected to Phi Beta Kappa. She received the 1993 KPMG Peat Marwick High Tech Entrepreneur Award, which honors individuals who have contributed significantly to the community and to the advancement of the high-technology industry. Her company, Dynamac, was NASA's Woman-Owned Small Business of the Year in 1998 and 1999, and KSC's Woman-Owned Small Business Contractor of the Year for five consecutive years.



Sharon Edney, research scientist, and Diana MacArthur harvest radish plants grown as part of the Advanced Life Support Research Program conducted by Dynamac Corporation at the Kennedy Space Center in support of long-duration space exploration.





## Irma Tudor, *Analytical Services, Inc.*

As a first-generation American, Irma L. Tudor did not plan to launch her own company contracting services to the Federal Government, but, over time, that is exactly what happened.

Her journey to Huntsville, AL, began when Tudor's parents moved the family from Mexico to El Paso, TX, so she and her six brothers and sisters could be educated in America. Every child was given a mission: get a college education by almost any means possible. Tudor took jobs and earned scholarships to put herself through the University of Notre Dame, where she earned a bachelor's degree in accountancy. After graduating, she worked as an auditor and certified public accountant for two international accounting firms, and as a controller with a large food-processing company. After marrying Air Force officer and Alabama native Jack Tudor, she moved to Alabama and earned an MBA at Troy State University. There, she prepared her thesis on Government contracting opportunities for minority firms, which became the basis for her business plan.

Tudor incorporated Analytical Services, Inc., (ASI) in 1992 and began operations in 1993 with two employees. Today, ASI provides management and technical solutions to Government customers in the areas of engineering, scientific analysis, information technology, program management, and organizational development. ASI is recognized as a top-500 Hispanic-owned business in the U.S. with over 300 employees.

In 2003, Analytical Services earned the honor of NASA's Woman-Owned Small Business of the Year for work performed in support of the Orbital Space Plane program. Also in 2003, she was named to both the Tennessee Valley Base Realignment and Closure (BRAC) committee (a group dedicated to preserving Huntsville's future within the defense community) and to the University of Notre Dame Advisory Board for the Mendoza College of Business. Other honors include the Better Business Bureau's Torch Award for Marketplace Ethics (2002), National Minority Business of the Year by the U.S. Small Business Administration (2001), the Department of Defense

Nunn-Perry Mentor-Protégé award (2001), and Alabama Small Business Person of the Year (2000).

Tudor credits her success to a philosophy explored in a work by Carl Holmes, titled *And Then Some*. She believes those three words are the difference between performing average and top-notch service, and inspires employees to live by that philosophy. Those words are now adopted into ASI's marketing line: "Your Advantage. And Then Some." This is a reminder of providing excellent service always.



Mrs. Irma Tudor receives an award from NASA Deputy Administrator Frederick Gregory.





## Mildred Boyd, Ph.D., *EduTech, Ltd., Inc.*

President of EduTech Ltd. since 1992, Mildred Lockhart-Boyd has been with the company since its beginning. She explains her corporate mission as “the betterment of people through education and knowledge sharing.” Under Boyd’s direction, EduTech provides instruction, training, curriculum development and evaluation, knowledge-sharing initiatives, educational research, and program administration and university outreach services to NASA and other clients.

After several years as a teacher, university instructor, researcher, and university administrator, Boyd joined the consulting world. Through her college sorority, Delta Sigma Theta, she met Mildred S. Wyatt, Ph.D., the founder of EduTech, who invited her to join the fledgling company. “We had the same interests and shared the same vision,” Boyd explains. That vision was to make a difference in terms of gaining access for minorities, in particular for females in math and science careers.

A year and a half after the pair met, Wyatt passed away. Following Wyatt’s death, Boyd had to make the decision whether to walk away from the company’s work or to try to find a way to carry on the corporate vision. She chose to stay with EduTech, with assistance from the Small Business Administration (SBA) and the NASA Goddard Office of University Programs, the company’s primary client. “Without the guidance and help of Sandra Crawford [of the SBA] and the late Gerald Soffen [NASA], I couldn’t have forged on,” she explains.

In the last decade, EduTech evolved from a one-contract company to a multienterprise, multifaceted business. EduTech’s roster of clients includes NASA, the Federal Emergency Management Agency (FEMA), the National Institute on Drug Abuse (NIDA), the U.S. Department of Education, Visa USA, Dartmouth’s Tuck School of Business, Morgan State University, the University of the District of Columbia, and George Mason University.

But Boyd hasn’t forgotten her company’s growing pains. As a participant in the NASA Mentor Protégé program, Boyd provides advice and guidance to companies with less experience than hers. “We share what we

know,” says Boyd, “but we’re also aware that we need to continue to learn more ourselves.”

Boyd also points to NASA when she discusses the hallmarks of her company. Since its early days helping to develop the first minority outreach efforts at NASA Goddard Space Flight Center, under Boyd’s guidance EduTech has developed several other “firsts” for the Agency: the first NASA Academy (a national leadership program for undergraduate and graduate science and technology students), a residential internship program that provides firsthand experience in aerospace research and leadership development; the first design and support of an outreach effort for Native Americans (resulting in the ACESS Conference); and the first project management story-telling magazine, *ASK Magazine*, an award-winning international publication that captures stories by project managers within the NASA project management community.

Dr. Boyd holds a bachelor’s degree in botany and a master’s degree in microbiology from Howard University in Washington, DC. She returned home to Michigan to enter a Ph.D. program at Michigan State University, and she completed the program in 1977.



Dr. Boyd with EduTech staff that provides curriculum development and project management training for NASA Academy of Program and Project Leadership through the Project Management Development Process (PMDP). Standing from left to right are: Beverly Floyd, Elisse Wright, and Denise Lee.



## Rosalind Doyle, *Cimarron, Inc.*

Rosalind “Roz” Doyle is the majority stockholder and Chief Executive Officer of Cimarron. Since assuming this position, the company has prospered, securing major contracts with Lockheed Martin and Boeing. Headquartered in Houston, Cimarron began business as Cimarron Software Services, Inc., in 1981. Today, with over 460 employees and operations in Texas, Florida, and Louisiana, Cimarron provides software and systems engineering and implementation for large real-time control systems, onboard flight software, large database enterprise systems, turnkey office automation, and accounting solutions. Currently, Cimarron develops flight avionics software for the International Space Station under a subcontract to the Boeing Company to include software and hardware integration, testing, and simulation. Additionally, Cimarron performs the maintenance, operations, and sustaining engineering tasks for the NASA Johnson Space Center (JSC) Mission Control Center under a subcontract to Lockheed Martin Space Operations. Through Roz’s efforts, both Lockheed Martin and Boeing have made Cimarron a part of the NASA Mentor-Protégé program. The Cimarron/Boeing team was awarded the NASA Mentor Protégé Award in 2002. That same year, Cimarron was named Boeing Supplier of the Year in the aerospace support category. In addition, Cimarron was awarded JSC Subcontractor of the Year by the JSC Office of Procurement in 2002 and 2003.

Rosalind founded Cimarron’s Education Products Group. Her objective was to apply Cimarron’s information technology and services management strengths to develop and provide automated strategic planning products to educational organizations within Federal and state agencies. Cimarron has developed four such products. Under her direction, Cimarron was able to win a statewide contract from the Arkansas Department of Education to provide strategic planning software for every campus in the state.

Rosalind holds a bachelor’s degree in curriculum and instruction from Texas A & M University and a master’s degree in educational management from the

University of Houston—Clear Lake. Rosalind serves as a board member for the Bay Area Houston Economic Partnership and for the Clear Lake Regional Medical Center. She is also an active and enthusiastic participant in congressional missions for maintaining a strong and vibrant space program.

Cimarron is one of the largest businesses in the Clear Lake area. Rosalind’s drive has helped the company garner numerous accolades in the Houston business community, including ranking third in *Houston Business Journal’s* Houston Small Business 100, seventh in their Top 50 Woman-Owned Businesses, and fourth in their Top 25 Houston-Based Software Development Companies.



On duty in the Ground Control console in the International Space Station Flight Control Room are Cimarron employees (left to right): Rebecca Marsh, Rosalind Doyle, and Gail Poole.





## Sheree Wen, Ph.D., Wenlab USA, Inc.

Sheree Wen, Ph.D, is the founder and President of WEN Technology Corporation and Wenlab USA, Inc., located in Yonkers, NY. The corporation is a privately held developer and manufacturer/distributor of monitors, LCDs, PC/TV products, kiosks, and rackmount and ruggedized IT-related products. WEN designs and services high-speed IT networking facilities and provides customized system design and integration of wireless handheld systems, as well as application specific software development. WEN also designs/develops appliances for eliminating harmful biopathogens such as bacteria, viruses, and spores, and for sanitizing air, mail, and surfaces, etc., in office spaces.

Sheree Wen received a Ph.D. from the School of Engineering, University of California at Berkeley in 1979. She joined IBM's research division staff later in that same year. She was promoted to department manager of materials, characterization, and analysis (1981), and then promoted to IBM Headquarters as program manager for technology (1984) to oversee technology used in computing systems, displays, printers, and data storage. Wen returned to the research division in 1986 as senior manager of optics, responsible for laser, lithography, and optoelectronics. She then served as program manager for strategic technology and university programs for technology products. Wen was the technical assistant to IBM's Senior Vice President of Manufacturing and Development prior to founding WEN Technology Corporation.

Sheree Wen has 22 patents, 20 patent disclosure publications, and has written and published more than 20 technical papers. She received the John E. Dorn Achievement Award from the American Society for Metal in 1978 and the Robert Lansing Hardy Gold Medal from The Metals, Materials, and Minerals Society (TMS-AIME), and she was awarded the honor of the Most Promising Young Scientist in America in 1979. She received an Outstanding Technical Achievement Award in 1986 and Invention Achievement Awards in 1987 and 1988 from IBM.

In 2001, Wenlab USA received the Award for Excellence from the U.S. Small Business Administration for excellent service on Federal contracts.

Dr. Wen was designated chairperson of TMS-AIME's Process Monitor and Control Committee and Materials Design and Manufacturing Division Award Committee; advisor to the *Journal of Metals, Materials, and Minerals*; and appointed the industrial liaison for the University of California at Berkeley.



Wenlab USA, Inc./WEN Technology Corporation. designed, developed, fabricated, and assembled the display systems for the NASA Rocket Launch program. The 19-inch display systems have touchscreen capability and separate controllers with required performance and security for NASA. Many of the electronics and steel parts are sourced locally. WEN delivered a few hundred of these systems to NASA.





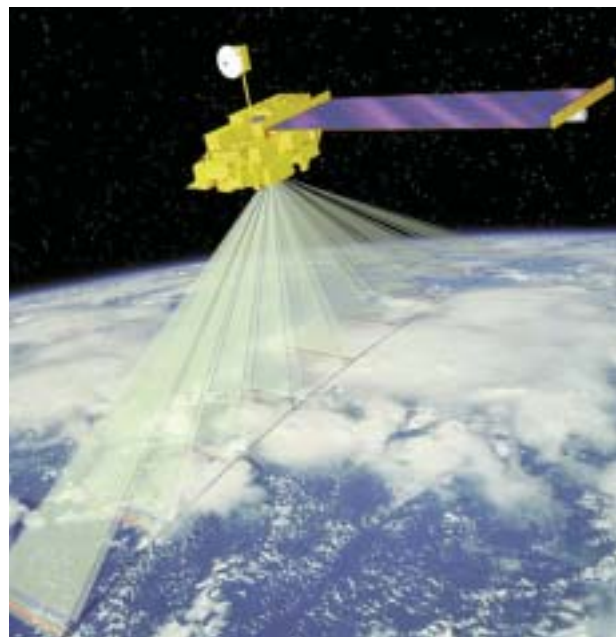
## Peggy Shreve, *Frontier Electronic Systems*

Peggy Shreve has functioned as the President, Chief Executive Officer, and Chairwoman of the Board of Directors of Frontier Electronic Systems Corporation, and its predecessor Frontier Engineering, Inc., since its inception in 1973. The company grew from 7 employees with sales of \$30,000 in 1981 to over 500 employees and sales of \$34,000,000, before spinning off 3 of the 4 principle business areas of Frontier Engineering, Inc., in August of 1997. The remaining business area focusing on the engineering design, development, manufacture, and post-delivery support of electronic subsystems has flourished under her leadership, setting new performance records for both net income growth and customer satisfaction since 1998.

Shreve is an advocate for minority businesses and has served in various roles during her career to promote minority entrepreneurship. She is on the Board of Directors of the National Indian Business Association, serves on the Historically Underutilized Business Council for the Air Force Small Disadvantaged Business Office, is a member of Oklahomans for Indian Opportunity, and was a member of NASA's Small Disadvantaged Business Board. She has participated in outreach activities for American Indians that were designed to promote entrepreneurship. Ms. Shreve has conducted business development seminars for Native Americans at Haskell Institute in Lawrence, KS, for the Pawnee Tribal Council in Pawnee, OK, and for the Otoe Tribal Council in Ponca City, OK, as well as participating in the Wind River Indian Reservation Youth Conference in Wind River, WY. Peggy Shreve also has served on the Governor's Council on Science and Technology, which was formed to nurture high-tech growth in Oklahoma, and served on the Governor's subcommittee on science and technology transfer. She served on the Oklahoma Capital Investment Board of Advisors through the Oklahoma State Department of Commerce, the Governor's Council of Economic Advisors, and as a board member for the Stillwater, OK, Chamber of Commerce.

Shreve has earned acclaim as an American Indian business owner, and, under her direction, Frontier has

received numerous awards for its outstanding performance. Most recently, Frontier Electronic Systems was selected as a Nunn-Perry Award winner for the year 2000, as a result of Frontier Electronic Systems Corp.'s high-quality performance of work performed for TRW through the DOD Mentor-Protégé program. She is a two-time Nunn-Perry Award winner, having previously won this prestigious award in 1997. Other awards garnered in the year 2000 include a Special Recognition Award from NASA for Frontier's work on the International Space Station, the SBA Excellence Award, and the TRW Subcontractor of the Year Award. Frontier Electronic Systems also received recognition as the SBA Region VI Subcontractor of the Year in 1999, earned certification as a Preferred Supplier (Silver) to Boeing, and at the state level received the Oklahoma Academy Technology in Business Award. Shreve was named Female Entrepreneur of the Year at the national and regional levels, Business Person of the Year at the state level, Small Business Person of the Year at the local level, and the Minority Small Business Person of the Year at the state level.



Frontier Electronic Systems Corp. is producing high-technology components for a key NASA program, the Earth Observing System (EOS).



## Susan Wu, Ph.D., *ERC, Inc.*

**Y**.C.L. Susan Wu, Ph.D., founded and serves as Chairman of ERC, Incorporated, a woman-owned, SBA-certified SDB company offering diversified high-technology services in engineering; systems integration and management; research and development; test and evaluation; and information technology. Since its inception in 1988, ERC graduated from the 8(a) program and continues to grow in employee numbers and revenue. Today ERC has approximately 450 employees supporting customers including NASA, DOD, CSC, Jacobs Sverdrup, Teledyne Brown Engineering, and SAIC.

Under Susan Wu's leadership and commitment to quality, ERC received NASA's Minority Contractor of the Year Award in 1994. In 1993 and 1994, ERC received Marshall Space Flight Center's (MSFC) Minority Contractor of the Year Award. ERC was the winner of the 2003 MSFC Contractor Excellence Award for the small business services category. In 2002, ERC received NASA's Turning Goals Into Reality Award and the Small Business Administration Administrator's Award for Excellence.

Prior to establishing ERC, Wu was a professor of aerospace engineering at the University of Tennessee Space Institute (UTSI) near Tullahoma, TN. While at UTSI, Wu managed large magnetohydrodynamic (MHD) research programs, most notably as administrator of the DOE multi-million-dollar coal-fired MHD commercial power research project with over 130 staff members. At the time of her departure from UTSI, the Tennessee House of Representatives passed a resolution honoring her distinguished career and her many contributions to UTSI during her 23 years of service.

Susan Wu has over 40 years of experience in management, marketing, research, and teaching. Many organizations have recognized her accomplishments with awards and honors. She was the 1994 American Institute of Aeronautics and Astronautics Plasmadynamics and Laser Award recipient. In 1987, the Colorado Public Service honored Wu on a poster of prominent women scientists entitled "Great Minds in Science and Engineering." In 1985, she received

the SWE Achievement Award—the highest honor bestowed by the Society of Women Engineers. *Who's Who of American Women* and several biographical sources list her among other prominent professionals.

Wu received her B.S. degree in mechanical engineering from National Taiwan University, her M.S. degree in aeronautical engineering from Ohio State University, and her Ph.D. in aeronautics from the California Institute of Technology. She is married to James Wu, Ph.D. They have three grown children, Ernest, Albert, and Karen, and three grandchildren. Ernest currently serves as ERC's President and CEO. Albert operates ERC's Washington, DC, office.



Dr. Susan Wu is pictured with Mr. Ralph Thomas, Assistant Administrator for NASA's Office of Small and Disadvantaged Business Utilization, at a Mentor-Protégé conference.





## Chris Bergaila, *BES Engineering*

As a former CFO and staunch advocate of financial solvency, Chris Bergaila hardly fits the stereotype of the aggressive entrepreneurial risk taker. With a bachelor's and dual master's degrees in prelaw and political science/behavioral psychology, respectively, Chris Bergaila started her business career in accounting, where she quickly climbed to the ranks of CFO for a group of privately held companies involved in the development of underground storage, crude oil trading, and gas liquids production. In her initial tenure with these organizations, Bergaila observed what traits were required to be successful in startup operations. Applying these lessons, she understood that one must be able to quickly evaluate the market and understand client needs. When she saw the oil business going down in 1983, Chris Bergaila quickly advised senior management to dissolve the operation and sell the assets of the organization. This insight allowed the organization to disband and still maintain a positive cash flow.

Cashing in her retirement funds for initial capital, Bergaila, through luck and determination, managed to land a contract with a major engineering firm in the Houston area. From this beginning, the firm has grown to be one of the most respected technical staffing agencies in Houston.

Bergaila Engineering Services, Inc., (BES) was founded in September 1995 as a sister company to B&A. Starting with a small group of professional engineers, the initial focus was to establish a high-end consulting practice for specialized engineering problems in the hydrocarbon process industry.

BES, originally established as a specialty design firm to support vessel engineering, has expanded considerably in the short period since its inception eight years ago. From a single base of business, BES has grown not only in the initial area of expertise, but has transcended other markets including aerospace. BES's success in this latter area was clearly demonstrated by being the recipient of the NASA Mentor-Protégé of the Year Award. This award is a national recognition by NASA for sustained exceptional performance. The fact that BES received the award

is of itself an outstanding achievement, but it did so with the same group of staff that had no previous training in aerospace work. BES was also the first woman-owned business to receive this award and the most junior in terms of time in the industry.

Ms. Bergaila believes that the greatest contribution BES Engineering has made to the NASA community has been to bring fresh ideas and approaches to the execution of projects. With efficiency and accuracy, the staff operates with streamlined procedures, low overhead, low expense, and flexibility to quickly react to client needs in the most cost-effective manner. In addition, BES has introduced a new group of subcontractors, many from small disadvantaged businesses who had no previous NASA contracting experience, who have brought their efficiencies from other industries to this sector.



Chris Bergaila and Kirk Gorski, design supervisor, discuss designs in his office.



Gloria Smith,  
*SMITHLAIN Enterprises, Inc.*

Gloria L. Smith is President of SMITHLAIN Enterprises, Inc. With corporate headquarters in Huntsville, AL, SMITHLAIN is a woman-owned, small disadvantaged business founded on June 12, 1998. The company has experienced phenomenal growth in the last five years.

Ever attuned to the needs of business and industry, Gloria Smith has assembled a capable team of professionals to provide support services in the areas of logistics, training and development, program management, information technology, manufacturing, and conference planning. Her current clients include NASA Headquarters, NASA Marshall Space Flight Center, the U.S. Army Aviation and Missile Command (AMCOM), the U.S. Army Corps of Engineers at Huntsville Center, Teledyne Brown Engineering, Teledyne Solutions, and Boeing.

In September 2001, SMITHLAIN Enterprises was awarded the NASA Engineering Training (NET) contract by NASA Headquarters, Washington, DC. This unique opportunity allows SMITHLAIN to work with and train “the best of the best” NASA engineers in system design, system requirements, systems engineering, software acquisition, software engineering, verification, validation, testing, and other special areas. As a subcontractor under the NASA Headquarters Office of Small Disadvantaged Business Utilization (OSDBU), Training and Development of Small Businesses in Advanced Technologies (TADSBAT) contract, Smith’s operation has successfully supported and trained over 1,800 small businesses throughout the United States and Puerto Rico. This training includes how to do business with NASA and other Government agencies in the areas of marketing, ISO 9000: 2000, financial management, proposal preparation, strategies for small businesses, teaming agreements, and the NASA Mentor-Protégé program.

The recipient of bachelor of science and master of science degrees in management from Faulkner University, Smith previously received an associate degree from Robinson Business College in Monroe, LA. A fierce

advocate of continuing education, Gloria Smith has received several certificates throughout her career.

Owing to her diligence, SMITHLAIN received its 8(a) certification in August 1999 and HUBZone certification in July 2000, and is a viable member of the Huntsville/Madison County Chamber of Commerce.

Smith is an active member of numerous civic organizations and associations, among them the American Business Women’s Association, Women’s Business Council Board of Directors, AUSA, and HAMA. She is an advisor for the Organization of Small Business Owners, Inc., and is dedicated to causes that encourage young girls and women to aspire to new heights. She also gives her time and talents to local organizations, including the Girl Scouts of North Alabama and Girls, Incorporated, for which she serves on the Executive Board of Directors.



Gloria Smith is speaking at the 2002 NASA Mentor-Protégé Program.





## Belinda Guadarrama, *GC Micro Corp.*

Belinda Guadarrama founded GC Micro in 1986. During the past 17 years, GC Micro has grown from a 2-person company to a 30-person company with annual revenue of over \$30 million. GC Micro has become a leading supplier of computer hardware and software products and integrated systems to the defense and aerospace industries, state and Federal agencies, and *Fortune* 1,000 companies.

GC Micro has been recognized by its customers for outstanding customer service. The company has received numerous awards including the Just-In-Time Supplier of the Year Award in 2003 by Sandia National Laboratory; the World-Class Team Award in 2003 by Northrop Grumman; Minority Supplier of the Year by the Northern California Supplier Development Council in 1998 and 2000; Technology Vendor of the Year by Lawrence Livermore National Laboratory in 2000; Customer Partnership Award from Sandia National Laboratory; and the Administrator's Award for Excellence by the U.S. Small Business Administration (SBA). GC Micro was rated one of the 500 largest Hispanic-owned companies from 1993 through 2003 by *Hispanic Business* magazine, and it was listed as one of the 100 largest women-owned companies in the San Francisco Bay Area from 1998 through 2002.

Belinda Guadarrama is recognized nationally for her advocacy of small and minority business issues, and has been named 2002 Hispanic Business Woman of the Year by the United States Hispanic Chamber of Commerce; 2002 Latina Entrepreneur of the Year by the Latin Business Association; second runner up for the National Small Business Person of the Year by the U.S. SBA; and the 2002 California State Small Business Person of the Year by the SBA. In 2001, she was awarded a Public Service Medal by NASA, and she served as the Chair of the NASA Minority Business Resource Advisory Committee from 1996 to 2001. The committee works with NASA and its contractors to ensure the participation of minority-owned firms in the future of space exploration. In 1997, Guadarrama was named National Minority Female Entrepreneur of the Year by the U.S. Department of Commerce; named

as Woman Who Could Be President by the League of Women Voters of San Francisco; and received a certificate of appreciation from the U.S. Commission on Minority Business Development for service to minority businesses. She is a board member of the National Association of Small Disadvantaged Businesses and was appointed as delegate by Senator Boxer to the National White House Conference on Small Business.

GC Micro strongly supports community activities and is a recipient of the Community Service Award from the Mexican-American Legal Defense and Educational Fund; recipient of the Spirit of Marin Award for community contribution and participation; board member of the California Partnership on Diversity; sponsor of the summer little league program for the Ochoa Migrant Farm Worker's camp from 1995 to 2002; and sponsor of Cada Cabeza es un Mundo (Each Mind is a World), a national dropout prevention program for at-risk Latino Chicano youth from 1996 to 2003.



Dennis Korbel, NASA Ames Information Specialist, and Belinda Guadarrama review current delivery orders.



## Elizabeth Morard, *Qualis Corp.*

Born in north Mississippi, Elizabeth Morard grew up in the rocket city—Huntsville, AL. Educated in Huntsville, Morard earned a cum laude bachelor of science degree in business administration from Athens State University. Morard is active in the local and business community, and supports such local organizations as the Women's Business Council, Women's Economic Development Council, BizTech Board of Directors, Marshall Child Development Center Board of Directors, Huntsville Association of Small Businesses in Advanced Technology, Women in Defense (Tennessee Valley Chapter), and City Business Education Advisory Committee (Butler High School).

Morard founded Qualis Corporation in 1993 with business partner, Mary Engel. The company was incorporated in Huntsville and supports NASA, defense, and commercial customers in the areas of engineering analysis, design, and testing, and program support/cost analysis. The company is a designated small disadvantaged business and received SBA 8(a) certification in July 1997.

Qualis began with two employees holding planning meetings in the evenings around a dining room table. From the company's first contract to support a commercial inventory management software program and its first Government subcontract conducting Space Shuttle base heating and plume analysis, the company experienced steady growth to over 100 employees. The company has managed nearly 60 contracts such as Small Business Innovative Research projects, including a Marshall Space Flight Center (MSFC) Phase II effort entitled Reusable Launch Vehicle Base Heating Test Improvements, though the majority of Qualis's work has been through subcontracts.

Under subcontract to Jacob Sverdrup's (JS) MSFC contract, Qualis provides engineering, scientific, and technical services. Also under contract to JS at Eglin AFB, Qualis provides sustained technical and engineering acquisition support to the Air Force.

As a major partner in the ICRC/Qualis team conducting a contract for materials testing for aerospace

environments at MSFC, Qualis performs routine materials testing at the MSFC Materials Combustion Research Facility and performs routine testing at the Environment Test Facility and several other MSFC laboratories, along with engineering, scientific, and database development tasks.

Complementary to the company's technical and engineering capabilities, Qualis supports NASA and the defense industry in the areas of program support and cost analysis.

Qualis, along with its prime contractor, JS, received the 2001 NASA Mentor-Protégé Award in the first year of its three-year Mentor-Protégé program—the first program for MSFC. Additionally, Qualis was awarded the U.S. Small Business Administration Administrator's Award of Excellence in 2002 and was a finalist in the technology category of the 2003 Huntsville/Madison County Small Business Awards.



Elizabeth Morard and Tim Thornton monitor the V20 Thermal-Vacuum Chamber operation in support of the Common Berthing Mechanism at the Environmental Test Facility at Marshall Space Flight Center.





## Sandy Johnson, *Barrios Technology*

Sandra G. (Sandy) Johnson was one of the original founders of Barrios Technology, Inc. Beginning with the company's founding in Houston, TX, and their first contract with NASA in 1980, services to space programs have been the cornerstone of their business. Starting with only 15 employees, the company prospered, grew, and underwent management changes. Sandy's career at Barrios has spanned the many aspects of business: engineering, training, project management, business management, and business development. In July 1993, Sandy purchased majority interest in the company.

She has led the company in their wins of prime NASA contracts and numerous subcontracts. Since her acquisition of the company, Barrios' sales have increased to over \$37 million annually with a workforce of approximately 320. Today, their business capabilities focus on engineering and space operations services, information technology and tools, and custom training solutions. Barrios supports all human space flight programs, primarily the Space Shuttle and International Space Station Programs.

As a premier small business in the space community, Barrios has a history of award-winning performance and national recognition among small technically oriented companies. In March 2003, the Barrios' Quality Management System was certified ISO 9001: 2000 compliant. Barrios won NASA's prestigious George M. Low Award for quality and excellence in the small business product category in 1999, was selected as NASA Johnson Space Center's Small Business Contractor of the Year in 1998, and has received annual awards as one of Houston's top 50 woman-owned businesses since 1985.

In addition to her management responsibilities, Sandy supports numerous community organizations. She is the past chair of the Clear Creek Education Foundation, executive board member of the Bay Area Houston Economic Partnership (BAHEP), and board member of the University of Houston—Clear Lake (UHCL) Development and Advisory Council, Communities in Schools, and United Way of the Texas

Gulf Coast. She also participates in the Women's Business Enterprise Alliance (WBEA) and the Greater Houston Partnership (GHP). Sandy has a B.S. in mathematics and an M.B.A. in business management. She lives in the Clear Lake area of Houston, TX, with her husband Doug and her two daughters, ages 19 and 16.



Barrios engineers participate in crew emergency egress, search and rescue, and crew rescue exercises, cooperating with NASA, DOD, and DOT.





## Mica Endsley, Ph.D., *SA Technologies*

Mica R. Endsley, Ph.D., is President of SA Technologies in Marietta, GA, which is a cognitive engineering firm specializing in the development of operator interfaces for the next generation of systems for aviation, air traffic control, medicine, and military operations. Founded in 1997, SA Technologies was named the Woman-Owned Small Business of the Year by NASA in 2001.

Mica Endsley received a Ph.D. in industrial and systems engineering from the University of Southern California in 1990, while she was working as an engineering specialist for the Northrop Corporation. Prior to forming SA Technologies, she was a visiting associate professor at MIT in the Department of Aeronautics and Astronautics, and associate professor of industrial engineering at Texas Tech University.

Endsley is a recognized world leader in the design, development, and evaluation of systems to support human situation awareness and decisionmaking. This human-centered design approach has been found to be critical to successfully integrating people with advanced technologies and automation in a wide variety of domains. Projects include research related to situation awareness in future cockpits and air traffic management systems, information dominance in distributed teams in battlefield scenarios, and training for situation awareness in aircraft maintenance teams.

Dr. Endsley has led numerous projects on a variety of issues related to situation awareness, including investigations of human error in aviation accidents and incidents, analysis of situation awareness in commercial aviation and air traffic control, development of the SAGAT technique for measuring situation awareness, investigations of the effect of free flight, and studies of the effects of automation on pilot and air traffic controller situation awareness.

In work for NASA Ames Research Center, SA Technologies developed SA Trainer, a computer-based training program for enhancing the situation awareness of general aviation pilots as part of NASA's Aviation

Safety Program. In addition, SA Technologies has contributed to efforts on the leading edge of cockpit design, working with NASA Langley Research Center researchers to develop and evaluate new synthetic vision displays for enhancing pilot situation awareness in next-generation vehicles and to investigate effective techniques for integrating pilots with advanced automation systems.

Mica Endsley is the author of over 160 scientific articles and reports, and is the recipient of the Jack Kraft Innovator Award from the Human Factors and Ergonomics Society for her work in the area of situation awareness. She also is the co-author of a new book entitled *Designing for Situation Awareness*.



Dr. Endsley has pioneered techniques for situation awareness measurement.



## Beth Williams, *TechTrans International*

Beth Williams co-founded TechTrans International, Inc., to support NASA at the start of the U.S.-Russian space program. Beth continues as President of this Houston-based business, which she built from a startup to a leading U.S. language and logistics services firm.

Raised in North Carolina, Beth Williams attended East Carolina University in Greenville, NC. After college, Beth joined the acclaimed Cypress Gardens water-skiing troupe. She went on to work in banking before marrying and raising a family. Her husband, a Marine test pilot and astronaut, was killed in a training flight crash in the 1960s. Widowed with two daughters, Beth returned to work, first as a real-estate broker and later as Director of the New Initiatives Office at The Lunar Planetary Institute.

Beth's initiative and varied working experience proved invaluable when she turned to building a company.

TechTrans was formed based on an identified business need. In 1993, NASA embarked on a program of joint space exploration with Russia. Beth and Natalie Karakulko (who served as lead interpreter for the Apollo-Soyuz Test Program) recognized the endeavor would require extensive language support, so they prepared an unsolicited proposal. NASA responded by issuing a formal Request for Proposal that resulted in a contract award to the company newly formed by Beth and Natalie.

Two months later, Natalie Karakulko was killed by a drunk driver. This tragic accident left the fledgling company with a void in technical management. Beth worked side-by-side with employees to learn technical aspects of the business. Since then, she has developed an exemplary management team, a top-notch staff, and a company culture that focuses on customer service.

Beth and her company have garnered numerous awards including NASA's 2002 Woman-Owned Business of the Year, three U.S. Small Business Administration Awards, Texas Executive Women's 2003 Top 10

Houston Area Women on the Move Award, and many others.

TechTrans is headquartered in Houston and maintains a full-service office in Moscow. The firm has grown from 8 employees in 1993 to more than 140 today. TechTrans has built a reputation for quality translation, interpretation, and language instruction on technically challenging projects—and reliable logistics support to professionals navigating the complexities of international work and travel. The outstanding contributions of this unique company are captured by Vladimir Soloviev, an ISS Flight Director at Mission Control in Russia, who observed: "The International Space Station has been built by interpreters and translators."



TechTrans International, which provides mission-critical translation and language services for NASA, created multiple language overlays for the International Space Station. Beth Williams is pictured here with coworker Peter Zheromskiy.

## Interested in becoming a success story as the contractors featured in this publication?

For more information on doing business with NASA, access the NASA home page at <http://www.hq.nasa.gov/>, then click on “Doing Business w/NASA.” Click on “NASA’s Office of Small and Disadvantaged Business” to see the many programs offered through this office.

You also can access the NASA Small Business Office directly at <http://osdbu.nasa.gov/> or by writing to NASA Headquarters, Office of Small and Disadvantaged Business Utilization, Code K, 300 E Street SW, Washington, DC 20546. The telephone number is 202-358-2088.



The staff of the Small Business Office is here to assist you.

Note: The “Women Contractors at NASA” publication is available from the NASA OSDBU home page at <http://osdbu.nasa.gov>





Summary by Shirley A. Perez,  
NASA Woman-Owned Small Business Advocate

I joined the staff of the Small and Disadvantaged Business Utilization Office in October 2003. I am a long-time NASA employee; however, my interactions with this office mainly consisted of receiving a memo requesting my small business goals and attendance at one Small Business conference or another. Before joining this office, I worked in a staff office, and, as such, we did not have Centers directly reporting through us; therefore, our contracting was limited.

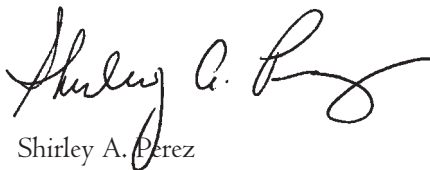
I did, however, encounter the Small Business Office when I was working on an Agencywide language interpretation and translation contract. I was very comfortable with the large contractor who had been providing the support, and my desire was to continue that relationship. Needless to say, I was not very happy when the contract specialist notified me that the Small Business Office had taken a position, and the decision was to move the procurement to a small business.

Looking back on that change today, I can honestly say that it was the right decision. The contract was awarded to a small, woman-owned business, and they have now provided over six years of consistent outstanding support to the Agency.

The contract was recompeted at the end of its first five-year run, and the same small business won the recompete for another five years.

That experience opened my eyes to the significant role small business, and in this case a woman-owned business, plays in helping NASA to carry out its Mission. Initially I may have been reluctant, but today I am a firm believer that small businesses don't mean lesser quality or inability to meet demands.

I thank the Small Business Office for their commitment to opening up procurements to small businesses, and I am happy to now be a part of their staff. Please join me in congratulating all of the successful women-owned businesses that have contributed so much to the success of NASA and are now being recognized in this publication.

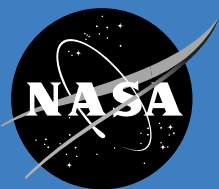


Shirley A. Perez









National Aeronautics  
and Space Administration

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